

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court

Woodbridge, VA 22193

SUBJECT: Modification of VPDES Permit VA0031763

TO: Marshall WWTP 2010 Modification File

FROM: Susan Mackert

DATE: July 13, 2010

On May 19, 2010, The Department of Environmental Quality – Northern Regional Office (DEQ-NRO) received a permit modification request from the Fauquier County Water and Sanitation Authority. The modification was requested by the permittee to address the termination of the Authority's pretreatment program and to revise permit language accordingly. This memorandum summarizes the changes to the permit and serves as the modification to the original Fact Sheet.

The following discussions are numbered as they appear in the original Fact Sheet. The information contained in this memorandum replaces or expands upon the information in the Fact Sheet.

20b. Other Permit Requirements – Pretreatment Program

Background Information and Rationale

The Pretreatment Program for Fauquier County Water and Sanitation Authority was originally approved on March 21, 2006. One Significant Industrial User (SIU) was identified and regulated through this program (Old Dominion Electric Cooperative – Marsh Run Generation Facility).

In correspondence dated May 6, 2010, the Fauquier County Water and Sanitation Authority proposed to delist the Old Dominion Electric Cooperative – Marsh Run Generation Facility as a SIU and to revoke the facility's SIU discharge permit. By letter dated May 19, 2010, DEQ had no objection to the delisting.

A review of industrial survey results submitted by the Fauquier County Water and Sanitation Authority on May 26, 2010, indicated that no SIUs have been found to discharge to the collection system of the Remington WWTP. Based on this review and the delisting of the Old Dominion Electric Cooperative – Marsh Run Generation Facility, DEQ staff determined the Fauquier County Water and Sanitation Authority may terminate the pretreatment program for the Marshall WWTP.

By letter dated June 21, 2010, the Fauquier County Water and Sanitation Authority was advised that although the pretreatment program may be terminated the Authority is still responsible for monitoring industrial user flow to the collection system. If the Fauquier County Water and Sanitation Authority determines that significant industrial users are present, implementation of a pretreatment program shall begin. DEQ guidance recommends that publicly owned treatment works with flows =40,000 gpd and with no approved program or conditional program conduct an industrial user survey every five years. As such, a requirement to conduct an industrial user survey within 180 days of the next permit reissuance in 2012 shall be included in the modified permit for the Marshall WWTP.

22. Changes to Permit from the Previously Issued Permit

a) Special Conditions

- A special condition was added to reflect the requirement to submit to DEQ an updated and complete survey of all industrial users discharging to the Marshall WWTP collection system within 180 days of the next reissuance.

b) Monitoring and Effluent Limitations

- Pretreatment program language was removed to reflect the termination of the Authority's program.
- In response to pretreatment language being removed from the permit, Other Requirements and Special Conditions are now found within Part I.C rather than Part I.D.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on 1) the proposed termination of the Fauquier County Water and Sanitation Authority's Pretreatment Program, and 2) the proposed modifications of permits from the Department of Environmental Quality that allow the release of treated wastewater into a water body in Fauquier County, Virginia.

PUBLIC COMMENT PERIOD: **TBD**, 2010 to 5:00 p.m. on **TBD**, 2010

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBERS: Fauquier County Water and Sanitation Authority, 7172 Kennedy Road, Warrenton, VA 20187, VA0020460, VA0031763, and VA0076805

NAME AND ADDRESS OF FACILITIES: Vint Hill Farms Station WWTP, 4266 Backe Drive, Warrenton, VA 20187
Marshall WWTP, 4319 Old Morgantown Road, Marshall, VA 20115
Remington WWTP, 12523 Lucky Hill Road, Remington, VA 22734

PRETREATMENT PROGRAM TERMINATION: The Pretreatment Program for Fauquier County Water and Sanitation Authority was originally approved on March 21, 2006. One Significant Industrial User (SIU) was identified and regulated through this program. The Fauquier County Water and Sanitation Authority has delisted the SIU and subsequently revoked the facility's SIU discharge permit in May 2010. The Fauquier County Water and Sanitation Authority has requested termination of the County's approved program.

PROJECT DESCRIPTION – PERMIT MODIFICATIONS: The Fauquier County Water and Sanitation Authority has applied for modifications of the permits for the public facilities listed above as the applicant proposes to terminate the County's pretreatment program. Termination of the pretreatment program does not effect already established effluent limitations and monitoring requirements for the facilities listed above.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Vint Hill Farms Station WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: pH, BOD₅, Total Suspended Solids, *E. coli*, Ammonia, Total Phosphorus, and Total Nitrogen. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Marshall WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: flow, pH, cBOD, TSS, DO, TKN, and *E. coli*. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Remington WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: pH, CBOD₅, Total Suspended Solids, Dissolved Oxygen, Total Kjeldahl Nitrogen, Total Recoverable Zinc, *E. coli*, and Chronic Toxicity. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

HOW TO COMMENT ON THE PRETREATMENT PROGRAM TERMINATION: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public meeting. Written comments should include the names, mailing addresses and telephone

numbers of the person commenting. To review pretreatment program documents, please contact Anna Westernik at anna.westernik@deq.virginia.gov; (703) 583-3837.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION ON THE PERMIT MODIFICATIONS: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Susan Mackert

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3853 E-mail: susan.mackert@deq.virginia.gov Fax: (703) 583-3821

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Marshall Wastewater Treatment Plant
NPDES Permit Number:	VA0031763
Permit Writer Name:	Susan Mackert
Date:	July 14, 2010

Major [☐]**Minor** [X]**Industrial** [☐]**Municipal** [X]**I.A. Draft Permit Package Submittal Includes:**

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?		X	
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	X		
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?			X
12. Are there any production-based, technology-based effluent limits in the permit?	X		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?	X		
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?		X	
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

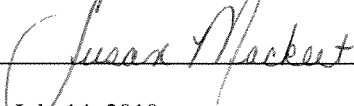
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Susan Mackert</u>
Title	<u>Environmental Specialist II Senior</u>
Signature	<u></u>
Date	<u>July 14, 2010</u>

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a minor, municipal permit. The discharge results from the operation of a 0.64 MGD wastewater treatment plant. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-05 et seq.

1. Facility Name and Mailing Address: Marshall Wastewater Treatment Plant
7172 Kennedy Road
Warrenton, VA 20187-1646
SIC Code: 4952 WWTP
Facility Location: 4319 Old Morganstown Road
Marshall, VA 20115
County: Fauquier
Facility Contact Name: Chiquitha Boram
Telephone Number: 540-364-1493
2. Permit No.: VA0031763
Current Expiration Date: November 7, 2007
Other VPDES Permits: VAN020053
Other Permits: N/A
E2/E3/E4 Status: N/A
3. Owner Name: Fauquier County Water and Sanitation Authority
Owner Contact/Title: Wesley Basore
Director of Operations
Telephone Number: 540-349-2092
4. Application Complete Date: 21 May 2007
Permit Drafted By: Susan Mackert
Date Drafted: September 17, 2007
Draft Permit Reviewed By: Alison Thompson
Date Reviewed: September 20, 2007
Public Comment Period: Start Date: October 18, 2007
End Date: November 19, 2007
5. Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination
Receiving Stream Name: Carter Run, UT
Drainage Area at Outfall: 0.54 square miles
River Mile: 0.48
Stream Basin: Rappahannock River
Subbasin: None
Section: 04
Stream Class: III
Special Standards: None
Waterbody ID: VAN-E02R
7Q10 Low Flow: 0.0 MGD
7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD
30Q5 Flow: 0.0 MGD
303(d) Listed: No
30Q10 Flow: 0.0 MGD
TMDL Approved: downstream of facility – Carter Run
Date TMDL Approved: March 10, 2005
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<u>✓</u> State Water Control Law <u>✓</u> Clean Water Act <u>✓</u> VPDES Permit Regulation <u>✓</u> EPA NPDES Regulation	<u> </u> EPA Guidelines <u>✓</u> Water Quality Standards <u>✓</u> Other: Stream Model
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7. Licensed Operator Requirements: Class II
8. Reliability Class: Class I

9. Permit Characterization:

<input type="checkbox"/> Private	<input checked="" type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input checked="" type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

The Marshall WWTP receives domestic wastewater from the Town of Marshall and the town of The Plains. The plant underwent an upgrade in 2004 to its current design flow of 0.64 MGD.

Wastewater enters the plant via an 18-inch diameter gravity interceptor at the headworks. The headworks consist of a mechanical fine barscreen with a manual by-pass (coarse) screen and an aerated vortex grit removal system. The grit and screenings are deposited into a dumpster for disposal at the landfill. During high flow events, the influent will overflow a weir located at the headworks structure and flow by gravity to an existing equalization (EQ) basin. The EQ basin contains three (3) surface aerators to aerate the contents. Two (2) submersible pumps are used to pump the wastewater back to the plant for subsequent treatment.

After preliminary treatment, the flow enters extended aeration basins for nitrification treatment. This treatment consists of two units with two passes each, operating in parallel. Effluent from the aeration basins is pumped to two (2) 50-foot diameter secondary clarifiers. The clarifiers are top fed, center well with peripheral overflow. After clarification, the flow is then directed to the ultraviolet disinfection unit. Here, bacteriological disinfection of the effluent is completed. Prior to final discharge, the flow is re-aerated via cascade steps.

See **Attachment 2** for a facility schematic/diagram.

TABLE 1 – Outfall Description				
Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.64 MGD	38° 51' 26" N 77° 51' 25" W
See Attachment 3 for topographic map.				

11. Sludge Treatment and Disposal Methods:

Waste Activated Sludge (WAS) is directed to the sludge holding tank for thickening prior to dewatering. Solids are dewatered via a belt press. The cake is then placed on a covered, concrete pad for temporary storage prior to transport to the Fauquier County Landfill for final disposal by plant personnel.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

None.

13. Material Storage:

TABLE 2 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Polymer	One 55 gallon drum	Under roof

14. Site Inspection: Performed by NRO staff on 21 August 2007 (see **Attachment 4**).

15. Receiving Stream Water Quality and Water Quality Standards:**a) Ambient Water Quality Data**

There is no monitoring data available for this receiving stream. The closest monitoring station is located at the Route 738 bridge crossing at Carter Run, approximately 10.53 rivermiles downstream from the facility outfall.

There are downstream impairments for bacteria. The *E. coli* TMDL for Carter Run was approved by the EPA on March 10, 2005. While the receiving stream was not included in the TMDL, the facility did receive a WLA for bacteria since it is an upstream source.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

In response, the Virginia General Assembly amended the State Water Control Law in 2005 to include the *Chesapeake Bay Watershed Nutrient Credit Exchange Program*. This statute set forth total nitrogen and total phosphorus discharge restrictions within the bay watershed. Concurrently, the State Water Control Board adopted new water quality criteria for the Chesapeake Bay and its tidal tributaries. These actions necessitate the evaluation and the inclusion of nitrogen and phosphorus limits on discharges within the bay watershed.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Carter Run, UT is located within Section 04 of the Rappahannock River Basin and is classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 5 details other water quality criteria applicable to the receiving stream.

Ammonia:

Staff has re-evaluated the effluent data for pH and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Therefore, the previous criteria will be carried forward with this reissuance. See **Attachment 6** for the derivation of the 90th percentile values of the effluent pH data from January 2003 to August 2007. A default value of 25°C was used since no temperature values were available.

Metals Criteria:

The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria are based on an average effluent value of 135 mg/L (**Attachment 6**).

Bacteria Criteria:

The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

E. coli bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 ml)	126	235

¹For two or more samples taken during any calendar month.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Carter Run, UT, is located within Section 04 of the Rappahannock River Basin. This section has been designated with no special standard designation.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified within a 2 mile radius of the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the fact that the critical flows 7Q10 and 1Q10 have been determined to be zero. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a) Effluent Screening

Effluent data obtained from Discharge Monitoring Reports (DMRs) from January 2003 to August 2007 have been reviewed and determined to be suitable for evaluation. Summary of effluent data is included in the reissuance file.

b) Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:	WLA	=	Wasteload allocation
	C _o	=	In-stream water quality criteria
	Q _e	=	Design flow
	Q _s	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
	f	=	Decimal fraction of critical flow
	C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations Toxic Pollutants, Outfall 001

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

Staff evaluated the new effluent data for pH and has concluded it is not significantly different than what was used to derive the existing ammonia limits. Therefore, existing ammonia limitations are proposed to continue in the reissued permit.

2) Metals/Organics:

The previous permit required monitoring for dissolved Copper once every six (6) months with a re-evaluation during this reissuance. It was determined that no limits are needed for Copper (**Attachment 7**).

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to Dissolved Oxygen (D.O.), Total Suspended Solids (TSS), Ammonia as N, Biochemical Oxygen Demand-5 day (BOD₅) and pH limitations are proposed.

D.O. and BOD₅ limitations are based on the stream modeling conducted in August 1990 (**Attachment 8**) and are set to meet the water quality criteria for D.O. in the receiving stream. The model uses a TKN value of 8.0 mg/L and a temperature value of 30°C to simulate a worst case scenario.

It is staff's practice to equate the TSS limits with the BOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9 VAC25-260-170.

It is proposed that Hardness monitoring be removed since this data was collected during the last permit and it was determined that no metal limits are needed.

e) Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9 VAC 25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

The State Water Control Board adopted new Water Quality Criteria for the Chesapeake Bay in March 2005. In addition to the Water Quality Standards, there are three new regulations:

- 9 VAC 25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.3 mg/L). Since the facility is not expanding nor have they installed nutrient removal technology, no concentration limits are included in this permit.
- 9 VAC 25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities with design flows of ≥ 0.5 MGD limiting the mass loading from these discharges.

- 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* was approved by the State Water Control Board on September 6, 2006 and became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited and otherwise regulated under the general permit and not this individual permit.

f) Effluent Limitations and Monitoring Summary

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen and *E. coli*.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.64 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	0.64	N/A	N/A	NL	Continuous	TIRE
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	3	18 mg/L	44 kg/day	27 mg/L	65 kg/day	N/A	N/A
Total Suspended Solids (TSS)	2	18 mg/L	44 kg/day	27 mg/L	65 kg/day	N/A	N/A
DO	3,4	N/A	N/A	6.5 mg/L	N/A	1/D	Grab
Ammonia, as N (Dec. – May)	3	1.7 mg/L	2.3 mg/L	N/A	N/A	3D/W	8H-C
Ammonia, as N (June – Nov.)	3	1.4 mg/L	1.8 mg/L	N/A	N/A	3D/W	8H-C
<i>E. coli</i> (Geometric Mean)	3,5	126 n/100 mL	N/A	N/A	N/A	3D/W	Grab

The basis for the limitations codes are:

MGD = Million gallons per day.

1/D = Once every day.

1. Federal Effluent Requirements

N/A = Not applicable.

3D/W = Three days a week.

2. Best Professional Judgement

NL = No limit; monitor and report.

3. Water Quality Standards

S.U. = Standard units.

4. Stream Model – **Attachment 8**

TIRE = Totalizing, indicating and recording equipment.

5. Carter Run TMDL – **Attachment 9**

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

20. Other Permit Requirements:a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Permit Section Part I.C., details the requirements of a Pretreatment Program.

The VPDES Permit Regulation at 9 VAC 25-31-730. through 900., and the Federal Pretreatment Regulations found in 40 CFR Part 403, requires POTWs with a design flow of >5.0 MGD and receiving from Industrial Users (IUs) pollutants that pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

This treatment works is a POTW with a current design capacity of 0.64 MGD. Fauquier County Water and Sanitation Authority also own and operate the Remington Wastewater Treatment Plant (VA0076805) and the Vint Hill Sewage Treatment Plant (VA0020460) with design flows of 2.0 MGD and 0.246 MGD, respectively. The combined design capacity of the three plants is 2.886 MGD.

The Pretreatment Program for Fauquier County was originally approved on 6 November 1995. A pretreatment program condition is included to survey the industrial users and submit the results, including the identification of any Significant Industrial Users (SIUs), to the DEQ-Northern Regional Office within 180 days of the permit's effective date. If SIUs are identified, the permittee must develop a program within one year of their identification. Also, if SIUs are identified, the permittee must submit an annual pretreatment report on the implementation of their pretreatment legal authority by January 31st of each year.

Attached is the Discharger Survey Short Form (**Attachment 10**)

21. Other Special Conditions:

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b) Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Before or on February 20, 2008, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class II operator.
- f) Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet reliability Class I.
- g) Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- h) Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Virginia Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq. The facility includes a treatment works treating domestic sewage.

22. Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - The Water Quality Criteria Reopener was removed with this reissuance.
 - The Water Quality Criteria Monitoring condition was removed with this reissuance.
- b) Monitoring and Effluent Limitations:
 - Chlorine limits were removed since the facility now has ultraviolet disinfection.
 - Hardness monitoring has been removed.
 - Dissolved Copper monitoring has been removed since data indicated that no limit was necessary.

24. Variances/Alternate Limits or Conditions: None.

25. Public Notice Information:

First Public Notice Date: October 17, 2007

Second Public Notice Date: October 24, 2007

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3853, sdmackert@deq.virginia.gov. See **Attachment 11** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The TMDL for Carter Run (*E. coli* bacteria) was approved by the EPA on March 10, 2005 which included portions downstream of the discharge. Even though the receiving stream was not mentioned in the TMDL, the facility did receive a WLA of 1.11×10^{12} cfu/year for *E. coli* bacteria at the 0.64 MGD permitted flow. The proposed limit of 126 n/100 mL for *E. coli* is in compliance with the approved TMDL.

TMDL Reopener: This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action(s): None.

Staff Comments: None.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in **Attachment 12**.